The Effects Of Unions On Wages By Occupation In The Public Sector

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ABSTRACT

This study examines union wage premiums by occupation in the public sector in the U.S. for the 2000-2004 period. In examining union-nonunion wage differences for public sector workers in occupations accounting for 66 percent of all public workers in the 2000-2004 Current Population Survey, we find positive and statistically significant union premiums for 27 out of 41 occupations examined. We also find large differences among occupations, with miscellaneous teachers and instructors receiving a 61 percent premium, secretaries and administrative assistants receiving a 5 percent premium, and 14 occupations receiving no statistically significant premium. In comparing union premiums by occupation between the private and public sectors, we find, in most cases, that private sector premiums are larger than public sector premiums. Finally, an Oaxaca decomposition shows that the majority of the differential between private sector union premiums and public sector union premiums appears to be due to differences in the way unions reward workers in the private and public sectors, not because of differences in the types of workers in the private and public sectors.

Keywords: Public Sector Union Wage Premiums

INTRODUCTION

Until recently, most research examining the effects of unions on wages in the U.S. has been in the private sector. However, several recent statistics regarding union membership in the U.S. suggest increased importance of examining these effects in the public sector. For example, while the share of private sector wage and salaried workers that are unionized has declined from 16.8 percent in 1983 to 7.2 percent in 2009, the share of public sector workers that are unionized has remained constant, at 36.7 percent in 1983 and 37.4 percent in 2009 (BLS). Furthermore, although the majority of unionized workers have historically been in the private sector (nearly 68 percent in 1983 according to Blanchflower and Bryson, 2004), the majority are now in the public sector (52 percent in 2009 according to the Bureau of Labor Statistics). These numbers suggest that an understanding of union wage effects requires a better understanding of the effects of unions on wages in the public sector.

A recent study by Bahrami, Bitzan, and Leitch (2009) provides several important findings regarding the role of unions in wage determination in the public sector in the U.S. First, there are persistent and consistent union wage premiums in the public sector between 1998 and 2004. Second, union wage premiums measured using a wage equation that allows for different union rewards for different personal characteristics results in higher measured premiums than those obtained with a traditional union wage equation that only measures the premium with an intercept shift. Third, there are substantial differences in union premiums for different types of workers – e.g. local workers receive higher union premiums than state workers, who in turn receive higher union premiums than federal workers; blue collar workers receive higher union premiums than white collar workers; part time workers receive higher union premiums than full time workers; female workers receive higher union premiums than male workers; and black workers receive higher union premiums than white workers. Finally, a large difference between the union wage premium in the private and public sectors still exists (22.7 percent in the private sector and 11.2 percent in the public sector), and much of it is explained by differences in public and private sector worker characteristics (40 to 50 percent). Specifically 22 to 30 percent of the difference in private-public sector union premiums is due to a much larger proportion of public sector workers in white collar occupations in comparison to the private sector, and 17 to

36 percent is due to a negative union premium for education and a lower level of education in the private sector. Moreover, large portions of the difference are also explained by higher union rewards for experience, for being full time, and for being male in the private sector in comparison to the public sector, while large negative portions of the difference are explained by lower union premiums in the private sector for education, residence in a metropolitan area, and for white collar occupations.

While the findings provide additional insight into public sector union premiums in the U.S., they also leave many unanswered questions. Some of these questions include: (1) are public sector union wage premiums persistent across occupations?, (2) how do union wage premiums vary by occupation within the public sector?, (3) are private sector union premiums higher than public sector union premiums across all occupations?, and (4) can we explain more of the gap between private sector union premiums and public sector union premiums when looking at specific occupations?

This study addresses these questions by examining public sector union premiums for workers in every occupation that accounts for at least .5 percent of all public sector workers between 2000 and 2004 in the Current Population Survey. These occupations account for more than 66 percent of all U.S. public sector workers over this period. Specifically, we estimate union premiums by occupation during this period, compare these premiums to those for the same occupations in the private sector, and perform an Oaxaca (Oaxaca 1973) decomposition to estimate the percentages of the differences in private-public sector union premiums that are explained by differences in worker characteristics and those that are explained by differences in the ways workers are rewarded for their characteristics by unions in the private and public sectors. We find positive union wage premiums in most public sector occupations, substantial variation in these premiums, higher union wage premiums in the private sector than in the public sector for most occupations, and most of the difference between private sector and public sector union premiums attributable to differences in the way unions reward workers in the private and public sectors, rather than due to differences in worker characteristics between private and public sectors. The next section provides a review of the literature regarding the impacts of unionization on wages in the public sector.

LITERATURE REVIEW

Several studies have examined union wage premiums in the public sector. However, most of these studies have either examined union premiums in the public sector overall, or examined union premiums in a specific occupation. Very few studies have examined union premiums by occupation for more than one occupation.

One of the few exceptions is Blanchflower and Bryson (2004), who examine union wage premiums in the public sector and compare them to the private sector. They find that union premiums have increased in the public sector since the late 1970s/early 1980s (13.3 percent average premium between 1979 and 1988, and 14.5 percent average premium between 1996 and 2001). In contrast, they find a decrease in union premiums in the private sector (22 percent between 1979 and 1988, and 17 percent between 1996 and 2001). In examining union premiums for specific occupations, they find an increase in the wage premium for teachers, lawyers, firefighters, and police over time, with little change in the premium for registered nurses and social workers over time. Other changes they note are a decline in the union wage premium for young workers and less educated workers, a slight increase in public sector union wage premium for men and a slight decrease for women. In identifying current union wage premiums in the public sector, they find that premiums are highest for local government workers and lowest for federal government workers. They also find the wage benefits of union membership are greatest for manual workers, the young, and the least educated.

One study that examines public union wages and employment in some specific occupations is Valletta (1993). In a cross-sectional analysis, Valletta (1993) finds positive union contract effects on firefighter/sanitation employment and wages for 900 U.S. cities between 1977 and 1980. This is consistent with demand shifts due to union political influence in municipal bargaining. However, when using a longitudinal analysis, his results provide little support for the demand shift hypothesis.

Zax and Ichniowski (1988) use data on 500 municipalities to analyze the effects of public unions on employment and pay levels. Their study shows that municipal unions use a mix of strategies that rely on collective bargaining and political lobbying that increases employment and compensation in the bargaining unit. Ashenfelter

(1970) studies the effect of unionization on wages of firemen by a random sample of cities. He finds that unionization of firemen may have raised the average hourly wage of unionized firemen by somewhere between 6 to 16 percent above what it would have been without unionization.

Several other studies also find public sector union wage premiums, including Bellante and Long 1981; Venti 1987; Kruger 1988; Moore and Raisian 1991; Moore and Newman 1991; and Choudhury 1994, cited in Mueller 2000. Much of the evidence on the impacts of unions on wages in the public sector is captured in a review article by Lewis (1990). He reviews 75 studies of public sector unions' effects on wages and concludes that the public-sector wage-gap studies generally find the public-sector average wage gain for unionized employees is smaller compared to the private sector. He argues that these studies had not taken into account the differences in public and private sectors regarding (1) fringe benefits, (2) threat or spillover effects, (3) work force mix (blue-collar versus white collar workers), and (4) trends in the estimated wage gain. After a simple adjustment for these factors, he concludes that the public sector union premium is lower than the private sector union premium by about 3 to 7 percentage points. Moreover, in examining whether the public sector union wage premium is changing relative to the private sector union wage premium, he finds that from 1973 to 1984 the public sector union wage premium moved approximately parallel to that in all sectors (private and public sectors combined). His estimate shows that the public sector union wage premium from 1973 to 1984 averaged about 8 to 12 percent. Within the public sector, his findings indicate that the mean union wage gain is lowest for federal employees and is highest for local government workers.

Freeman and Ichniowski (1988) show that overall, research findings suggest that average public sector union wage gains are about 5 percent less than private sector union wage gains. However, unionized local government workers in the public sector obtain as large or larger earnings differences over nonunion workers as do unionized private sector workers (Freeman and Ichniowski, 1988, p.6). It can be argued that the impact of unions on wages in the public sector (especially at the local level) depends on a set of complex variables, including the ability of public workers to strike, the size of government departments, the ability of the local governments to pay (as reflected in the property values in the community and average family incomes), and hosts of other factors - each requiring a separate investigation. The next section describes the data used in this study.

DATA

This study uses the Merged Outgoing Rotation Groups files from the Current Population Survey (CPS) from 2000 through 2004. Data include variables such as earnings, hours of work, educational level, union membership, gender, race, region of employment, age, part-time and full-time status, and class of worker. Data prior to 2000 are not used because occupational codes change between 1999 and 2000.

We estimate union wage premiums for every public sector occupation that accounts for at least .5 percent of all workers in the CPS sample over the 2000 through 2004 period. Table 1 shows the number of worker observations in the private and public sectors in these occupations before eliminating outliers and observations with missing data. As the table shows, these occupations account for 103,805 observations in the public sector (66 percent of all observations in the public sector between 2000 and 2004) and 197,118 observations in the private sector.

We eliminate observations where estimated hourly earnings are below $5.15 or over $200[1], observations where hourly earnings cannot be estimated using weekly earnings and usual hours of work due to missing data, observations where implied experience is negative, and observations with ages over 70 years. In some instances, the CPS assigns earnings where they are missing using a variety of procedures. These observations with allocated earnings are also deleted.[2] After eliminating these outliers and observations with missing data, there are 61,570 observations in the public sector and 105,107 observations in the private sector.

[1] $5.15 was the federal minimum wage over this time period. Hourly earnings are estimated as earnings per week divided by usual weekly hours.

[2] Eliminating observations where earnings or hours are allocated reduces the number of observations to 73,568. After eliminating observations where hourly earnings are below $5.15 or over $200, the number of observations drops to 62,166. Finally, eliminating observations where experience is negative or age is over 70 reduces observations to 61,750.

Table 1: Number of public and private sector workers by occupation in the 2000-2004 CPS (Top Public Sector Occupations)

Occupation	Public	Private
Elementary and middle school teachers	16,330	2,401
Secondary school teachers	7,100	1,121
Secretaries and administrative assistants	6,272	20,643
Teacher Assistants	5,206	1,574
Postsecondary teachers	5,044	2,641
Janitors and building cleaners	4,528	11,067
Police and sheriff's patrol officers	4,202	0
Managers, all other	3,807	13,308
Education administrators	3,158	1,727
Postal service mail carriers	2,593	0
Social workers	2,528	1,704
Bailiffs, correctional officers, and jailers	2,523	0
Special education teachers	2,423	272
Registered nurses	2,333	12,001
Counselors	2,213	1,785
Bus drivers	2,120	1,979
First-line supervisors/managers of office and administrative support workers	2,008	8,703
Office clerks, general	1,907	4,711
Fire fighters	1,831	45
Lawyers, judges, magistrates, and other judicial workers	1,519	3,457
Nursing, psychiatric, and home health aides	1,517	10,191
Accountants and auditors	1,515	8,785
Preschool and kindergarten teachers	1,495	2,447
Cooks	1,419	12,769
Child care workers	1,370	5,269
Postal service clerks	1,323	0
Grounds maintenance workers	1,294	5,868
Miscellaneous community and social service specialists	1,213	549
Other teachers and instructors	1,191	2,184
Receptionists and information clerks	1,165	8,962
Human resources, training, and labor relations specialists	1,150	3,714
Librarians	1,112	360
Security guards and gaming surveillance officers	1,059	4,792
Office and administrative support workers, all other	1,046	2,768
Driver/sales workers and truck drivers	1,046	21,273
Bookkeeping, accounting, and auditing clerks	991	9,556
Word processors and typists	877	1,739
Data entry keyers	867	3,562
Postal service mail sorters, processors, and processing machine operators	853	0
Personal and home care aides	834	3,187
First-line supervisors/managers of police and detectives	823	4

Measuring Union Wage Premiums by Occupation in the Public Sector

Most previous studies have estimated union wage premiums in the public sector by using a standard human capital wage equation, with a dummy variable for union membership:

$$\ln W = \alpha_n + \alpha_u UN + \sum_i \beta_i X_i + \varepsilon \quad (1)$$

where:

W = hourly earnings[3],
UN = union membership dummy, and
X_i = Vector of human capital and other characteristics.

However, Bahrami, Bitzan, and Leitch (2009) show that union wage premiums estimated with this approach are lower in comparison to those estimated with a human capital wage equation that accounts for differences in rewards to education, experience, and other characteristics for union and non-union workers. The general wage equation used is:

$$\ln W = \alpha_n + \alpha_u UN + \sum_i \beta_i X_i + \sum_i \phi_i UN \times X_i + \varepsilon \tag{2}$$

Separate wage equations are estimated for each occupation in the 2000-2004 time period, using occupations that account for at least .5 percent of workers from the Current Population Survey Merged Outgoing Rotation Groups. The specific wage equation used for each occupation is:

$$\ln W = \alpha_n + \alpha_n UN + \beta_1 Exper + \beta_2 Exper^2 + \beta_3 Educ + \beta_4 FT + \beta_5 SMSA + \beta_6 White + \beta_7 Black + \beta_8 Male + \sum_{i=9}^{16} \beta_i REG_i + \sum_{j=17}^{32} \phi_j UN \times X_j + \sum_{k=33}^{36} \varphi_k Year + \varepsilon \tag{3}$$

Where:

UN = Dummy Variable for Union Membership,
Exper = Implied Experience (Age-Educ-6),
Educ = Imputed years of education from NBER,
FT = Dummy for Full Time Status,
SMSA = Dummy for residence in SMSA,
White = Dummy for white,
Black = Dummy for black,
Male = Dummy for male,
Reg_i = Regional Dummies, and
X_j = vector of previous explanatory variables.
$Year_k$ = yearly dummies

Parameter estimates from these equations are used with average characteristics of public sector workers within each occupation to obtain estimates of union wage premiums by occupation. For example, the union wage premium for public-sector elementary teachers is estimated using the parameter estimates from a wage equation for public sector elementary teachers and the characteristics of the average public-sector elementary teacher. This provides an estimate of the union wage premium by occupation that considers the average characteristics of workers in each occupation and the unique union effect by occupation.

In the 41 occupational regressions, there are many interaction terms that are significant at the 1, 5, and 10 percent levels, suggesting that the rewards to human capital and other characteristics are not the same for union and nonunion workers. While not consistent in direction or significance among occupations, union workers in the public sector receive different returns for education, implied experience, being full time, male, white, black, male, and

[3] Hourly earnings are defined as earnings per week divided by usual weekly hours. Hourly wages are deflated by the Consumer Price Index for all Urban Consumers.

living in a metropolitan area than non-union workers. The lack of consistency in direction and significance of interaction terms among equations suggest more accurate estimates of union premiums by occupation are obtained using the occupation specific regressions.

Table 2 shows the estimated union wage premiums for workers in different occupations in the public sector, along with standard errors. As the table shows, the estimated union wage premium is positive for 36 out of the 41 occupations and 27 occupations have estimated premiums that are statistically significant.

Table 2: Estimated Union Wage Premiums by Occupation in the Public Sector

Occupation	Log Premium (Standard Error)
Other teachers and instructors	0.4789* (0.1352)
Driver/sales workers and truck drivers	0.4339* (0.1133)
Grounds maintenance workers	0.4268* (0.1029)
Postal service mail sorters, processors, and processing machine operators	0.3325* (0.0916)
Security guards and gaming surveillance officers	0.2970* (0.1095)
Janitors and building cleaners	0.2811* (0.0378)
Preschool and kindergarten teachers	0.2695* (0.0774)
Librarians	0.2694* (0.0911)
Nursing, psychiatric, and home health aides	0.2481* (0.0754)
Postal service mail carriers	0.2474* (0.0494)
Elementary and middle school teachers	0.2430* (0.0217)
Personal and home care aides	0.2325** (0.1144)
Postal service clerks	0.2199* (0.0647)
Police and sheriff's patrol officers	0.2188* (0.0412)
Fire fighters	0.2119*** (0.1088)
Secondary school teachers	0.2007* (0.0312)
Office and administrative support workers, all other	0.1894*** (0.1070)
Bus drivers	0.1758* (0.0539)
Bailiffs, correctional officers, and jailers	0.1740* (0.0438)
Teacher Assistants	0.1690* (0.0271)
Office clerks, general	0.1564** (0.0614)
Counselors	0.1534* (0.0467)
Cooks	0.1494* (0.0509)

Table 2: Estimated Union Wage Premiums by Occupation in the Public Sector

Occupation	Log Premium (Standard Error)
Data entry keyers	0.1461*** (0.0754)
Bookkeeping, accounting, and auditing clerks	0.1273 (0.0863)
Word processors and typists	0.1266*** (0.0748)
Social workers	0.1227* (0.0354)
Receptionists and information clerks	0.0818 (0.0861)
First-line supervisors/managers of office and administrative support workers	0.0720 (0.0505)
Special education teachers	0.0661 (0.0467)
Secretaries and administrative assistants	0.0521** (0.0246)
Child care workers	0.0438 (0.0847)
Human resources, training, and labor relations specialists	0.0377 (0.0751)
Miscellaneous community and social service specialists	0.0264 (0.0735)
Registered nurses	0.0145 (0.0444)
Postsecondary teachers	0.0010 (0.0375)
Managers, all other	-0.0061 (0.0441)
Accountants and auditors	-0.0118 (0.0533)
Education administrators	-0.0232 (0.0370)
First-line supervisors/managers of police and detectives	-0.0450 (0.0943)
Lawyers, judges, magistrates, and other judicial workers	-0.0643 (0.0624)
Standard errors in parentheses. *significant at the 1 percent level. **significant at the 5 percent level. ***significant at the 10 percent level.	

While most occupations show positive premiums, there is wide variation in the magnitude of the estimated premiums. As the table shows, the estimated union premium ranges from negative 6 percent to positive 61 percent.[4] However, none of the negative premiums are statistically significant. Examples of occupations with large union wage premiums include mail sorters, ground maintenance workers, driver/sales workers and truck drivers, and other teachers and instructors. Occupations with smaller positive union premiums include secretaries and administrative assistants, social workers, and word processors/typists. Occupations with no significant union premiums include lawyers, police supervisors, education administrators, accountants, and nurses.

As highlighted previously, Bahrami, et. al (2009) found that the union wage premium was much larger in the private sector than in the public sector. In order to see whether this is true across occupations, we estimate the

[4] For example, the wage premium for other teachers and instructors is $e^{.4789} - 1 = .61$ or 61%.

same model as above for each of the same occupations for which observations exist in the private sector (34 regressions).

Just as in the public sector, there are significant differences in the ways union workers are compensated for education, implied experience, location in a metropolitan area, full time status, race, and sex, in comparison to the way nonunion workers are compensated for these same characteristics in the private sector. Moreover, as in the public sector, the union premiums for such characteristics vary by occupation in the private sector.

Table 3 shows union premiums for private sector and public sector workers in the 41 occupations highlighted in Table 1. As the table shows, union wage premiums are higher for private sector workers in 22 of the 34 occupations for which there are both private and public sector workers. Moreover, in some cases these differences are large – the log union wage premium for private data entry workers exceeds that for public data entry workers by .23, the log union wage premium for private special education teachers exceeds that for public special education teachers by .21, the log union wage premium for private registered nurses exceeds that for public registered nurses by .15, the log union wage premium for private cooks exceeds that for public cooks by .14, and all of these differences are statistically significant. Furthermore, the log union wage premium for private sector workers exceeds that for public sector workers by at least .05 for 16 of the 34 occupations.

Oaxaca Decomposition of Differences in Private – Public Sector Union Premiums

A variant of the Oaxaca (1973) decomposition is used to help understand why the union wage premium is generally larger in the private sector than in the public sector. The standard Oaxaca decomposition is a method for separating the total earnings gap between two groups into two portions; one portion is explained by differences in personal characteristics, and the other is due to differences in estimated coefficients between the two groups.

We attempt to explain differences in the union wage premiums for various occupations between the private and public sectors using a general version of the Oaxaca decomposition introduced by Neumark (1988). [5] The total difference in the union wage premium between the private and public sectors is:

$$\sum_i \hat{\phi}_{PRIVi}\,\overline{X}_{PRIVi} - \sum_i \hat{\phi}_{PUBi}\,\overline{X}_{PUBi}$$

$$\begin{aligned} where:\quad & \hat{\phi}_{PRIVi} = parameter\ estimates\ of\ interaction\ terms\ in\ private\ model, \\ & \hat{\phi}_{PUBi} = parameter\ estimates\ of\ interaction\ terms\ in\ public\ model, \\ & \overline{X}_{PRIVi} = average\ characteristics\ of\ all\ private\ sector\ workers, and \\ & \overline{X}_{PUBi} = average\ characteristics\ of\ all\ public\ sector\ workers \end{aligned}$$

This difference can be explained by differences in characteristics between the average private and public sector worker, and by differences between the rewards to those characteristics in the private and public sectors, as follows:

$$\sum_i \hat{\phi}_{PRIVi}\,\overline{X}_{PRIVi} - \sum_i \hat{\phi}_{PUBi}\,\overline{X}_{PUBi} = \sum_i (\overline{X}_{PRIVi} - \overline{X}_{PUBi})\hat{\phi}_i + \left[\sum_i X_{PRIV_i}(\hat{\phi}_{PRIVi} - \hat{\phi}_i) - \sum_i X_{PUB_i}(\hat{\phi}_{PUBi} - \hat{\phi}_i)\right]$$

The first term on the right-hand side shows the portion of the difference between private union and public union wage premiums due to differences in the average characteristics of private and public workers. The second term on the right hand side shows the portion of the difference that is due to differences in the rewards to personal characteristics for union members in the private and public sectors.

[5] Using a model of discrimination due to employer preferences, he shows that if employer utility functions with respect to each type of labor is homogenous of degree zero, then the common wage structure can be estimated using the full sample. This study estimates the common wage structure using OLS on the combined sample.

In addition to showing the difference between union premiums in the private and public sectors, Table 3 shows the explained and unexplained portions of the difference as estimated using an Oaxaca decomposition.[6] [7] As the table shows, in most cases the majority of the difference between union premiums in the private sector and in the public sector is due to differences in the way unions reward various characteristics. However, many of the measured differences due to the way unions reward characteristics in the private and public sectors are not statistically significant (only 5 out of 28 are significant). On the other hand, although small percentages of the differences between union premiums in the private and public sectors are explained by difference in private-public sector worker characteristics, more of these differences are statistically significant (13 out of 28). However, in 6 of the 13 cases where differences are statistically significant, a negative portion of the gap is explained. In cases where the union premium is higher in the private sector than in the public sector, this would suggest that based on personal characteristics workers from the public sector would get a higher premium than they would in the private sector if unions rewarded workers in both sectors in the same way. That is, such differences actually support the idea that the difference in union premiums in the two sectors is due to the way workers are rewarded rather than due to differences in the characteristics of workers in the two sectors.

Table 3: Differences in Private-Public Sector Union Premiums and Percentages Explained by Differences in Worker Characteristics and How Unions Reward Workers in the Private and Public Sectors

	Log Union Premium			**Percent of Difference Explained By:**	
Occupation	**Private**	**Public**	**Diff (std. err.)#**	**Characteristics** Log Diff (standard error) Percent	**Rewards** Log Diff (standard error) Percent
Child care workers	0.4124	0.0438	0.3686	NA	NA
Data entry keyers	0.3777	0.1461	0.2317* (0.0352)	-0.0310* (0.0118) -13.4%	0.2627** (0.1076) 113.4%
Education administrators	0.2022	-0.0232	0.2253	NA	NA
Special education teachers	0.2740	0.0661	0.2079* (0.0546)	0.0387* (0.0106) 18.6%	0.1692 (0.4784) 81.4%
Registered nurses	0.1682	0.0145	0.1538* (0.0161)	0.0047 (0.0060) 3.0%	0.1491** (0.0588) 97.0%
Cooks	0.2910	0.1494	0.1416*** (0.0812)	-0.0094 (0.0265) -6.6%	0.1510*** (0.0777) 106.6%
Bookkeeping, accounting, and auditing clerks	0.2614	0.1273	0.1342* (0.0287)	-0.0198 (0.0113) -14.8%	0.1540 (0.1291) 114.8%
Postsecondary teachers	0.1274	0.0010	0.1264** (0.0503)	0.0312** (0.0136) 24.7%	0.0952 (0.0948) 75.3%
Bus drivers	0.3000	0.1758	0.1242* (0.0268)	0.0118 (0.0099) 9.5%	0.1124 (0.1134) 90.5%
Teacher Assistants	0.2631	0.1690	0.0941* (0.0379)	-0.0162*** (0.0094) -17.2%	0.1104 (0.0982) 117.2%

[6] Oaxaca decompositions could not be performed for some occupations, as the private sector did not have observed values of some variables. For example, all private sector lawyers in unions are also in metropolitan areas. In this case including SMSAxUN and UN results in perfect collinearity.

[7] Standard errors are estimated using the approach introduced by Oaxaca and Ransom (1998).

Table 3: Differences in Private-Public Sector Union Premiums and Percentages Explained by Differences in Worker Characteristics and How Unions Reward Workers in the Private and Public Sectors

	Log Union Premium			Percent of Difference Explained By:	
Preschool and kindergarten teachers	0.3545	0.2695	0.0850	NA	NA
Secondary school teachers	0.2841	0.2007	0.0834* (.0204)	0.0138* (0.0047) 16.6%	0.0695 (0.0817) 83.4%
Word processors and typists	0.2051	0.1266	0.0785 (0.0551)	0.0147 (0.0273) 18.7%	0.0638 (0.1352) 81.3%
Social workers	0.1967	0.1227	0.0741** (0.0368)	0.0064 (0.0080) 8.6%	0.0677 (0.1274) 91.4%
Receptionists and information clerks	0.1367	0.0818	0.0550*** (0.0318)	-0.0244** (0.0132) -44.4%	0.0794 (0.1050) 144.4%
Security guards and gaming surveillance officers	0.3482	0.2970	0.0513 (0.0360)	0.0147 (0.0150) 28.8%	0.0365 (0.1050) 71.2%
Driver/sales workers and truck drivers	0.4729	0.4339	0.0389*** (0.0232)	-0.0366* (0.0082) -94.1%	0.0755 (0.0785) 194.1%
Office clerks, general	0.1883	0.1564	0.0319 (0.0297)	-0.0142 (0.0121) -44.4%	0.0461 (0.0835) 144.4%
Secretaries and administrative assistants	0.0806	0.0521	0.0286*** (0.0172)	-0.0122** (0.0065) -42.7%	0.0408 (0.0543) 142.7%
Janitors and building cleaners	0.3029	0.2811	0.0217 (0.0161)	-0.0059 (0.0076) -27.2%	0.0276 (0.0456) 127.2%
Elementary and middle school teachers	0.2590	0.2430	0.0159 (0.0129)	0.0191* (0.0031) 119.5%	-0.0031 (0.0522) -19.5%
Accountants and auditors	-0.0081	-0.0118	0.0036 (0.0512)	-0.0575* (0.0195) -1580.6%	0.0611 (0.0930) 1680.6%
Managers, all other	-0.0205	-0.0061	-0.0144 (0.0445)	-0.0014 (0.0180) 10.0%	-0.0129 (0.0798) 90.0%
Lawyers, judges, magistrates, and other judicial workers	-0.0849	-0.0643	-0.0207	NA	NA
Miscellaneous community and social service specialists	-0.0292	0.0264	-0.0557	NA	NA
First-line supervisors/managers of office and administrative support workers	0.0005	0.0720	-0.0715** (0.0314)	-0.0273*** (0.0147) 38.2%	-0.0442 (0.0815) 61.8%
Personal and home care aides	0.1538	0.2325	-0.0787** (0.0391)	0.0344 (0.0244) -43.7%	-0.1131 (0.1123) 143.7%
Counselors	0.0702	0.1534	-0.0832*** (0.0493)	-0.0216 (0.0135) 26.0%	-0.0616 (0.1146) 74.0%
Grounds maintenance workers	0.3431	0.4268	-0.0837*** (0.0443)	-0.0251 (0.0218) 30.0%	-0.0586 (0.0973) 70.0%
Human resources, training, and labor relations specialists	-0.0578	0.0377	-0.0956*** (0.0532)	-0.0137 (0.0273)	-0.0819 (0.1008)

Table 3: Differences in Private-Public Sector Union Premiums and Percentages Explained by Differences in Worker Characteristics and How Unions Reward Workers in the Private and Public Sectors

	Log Union Premium			Percent of Difference Explained By:	
				14.3%	85.7%
Office and administrative support workers, all other	0.0409	0.1894	-0.1485* (0.0504)	-0.0581** (0.0243) 39.1%	-0.0904 (0.1073) 60.9%
Nursing, psychiatric, and home health aides	0.0909	0.2481	-0.1572* (0.0133)	-0.0185* (0.0069) 11.7%	-0.1387** (0.0623) 88.3%
Librarians	0.1066	0.2694	-0.1628	NA	NA
Other teachers and instructors	-0.0007	0.4789	-0.4797* (0.0547)	-0.0377 (0.0274) 7.9%	-0.4419* (0.1210) 92.1%
Police and sheriff's patrol officers	NA	0.2188	NA	NA	NA
Postal service mail carriers	NA	0.2474	NA	NA	NA
Bailiffs, correctional officers, and jailers	NA	0.1740	NA	NA	NA
Fire fighters	NA	0.2119	NA	NA	NA
Postal service clerks	NA	0.2199	NA	NA	NA
Postal service mail sorters, processors, and processing machine operators	NA	0.3325	NA	NA	NA
First-line supervisors/managers of police and detectives	NA	-0.0450	NA	NA	NA
Standard errors in parentheses *significant at the 1 percent level. **significant at the 5 percent level. ***significant at the 10 percent level. # Oaxaca decompositions could not be performed for some occupations, as the private sector did not have observed values of some variables. For example all private sector lawyers in unions are in metropolitan areas. Thus, including SMSAxUN and UN results in perfect collinearity. When an Oaxaca decomposition cannot be performed, the table includes NA.					

Thus, although statistical significance is not achieved in many cases, the findings generally support the idea that private-public sector differences in union premiums by occupation are due to differences in the way unions reward workers in each sector rather than due to differences in personal characteristics. That is, public sector workers and private sector workers in the same occupation have very similar levels of education and implied experience, similar proportions live in metropolitan areas and are full time, similar percentages are black, white, male, and female, and they live in similar regions. However, private and public sector unions reward such characteristics differently. In fact, in 27 out of the 28 occupations where Oaxaca decompositions are possible, at least 60 percent of the difference is due to differences in the way unions reward workers for their characteristics in the private and public sectors. In 21 out of the 28 occupations, at least 80 percent of the difference is due to such differences.

These findings lead to the question of why private sector unions reward workers differently than public sector unions. Some economists have argued that collective bargaining might be more effective in the public sector than private sector (Wellington and Winter 1971; Freeman 1986; Trejo 1991; Valletta 1993; Babcock et al.; Zax and Ichniowski 1988). Their main reasons are that public employers do not have a profit motive and are less resistant to union demands, public sector employees can exert political pressure during the election process, and the demand for public employees is relatively inelastic.

Despite these theoretical arguments, the majority of the empirical findings show that the union wage premium for private sector workers exceeds that for public sector workers, which is consistent with our findings.[8] The main reasons for these findings are the labor intensive nature of the government services, the low public tolerance to pay for government services, the large portion of public sector workers being in the white collar occupations, legal restrictions on the right to strike, monopsony power of the government, and the introduction of labor saving technologies and outsourcing of some public services.

SUMMARY AND IMPLICATIONS

This study examines union wage premiums by occupation in the public sector in the U.S. In examining union-nonunion wage differences for public sector workers in occupations accounting for 66 percent of all public workers in the 2000-2004 Current Population Survey, we find positive and statistically significant union premiums for 27 out of 41 occupations examined. We also find large differences among occupations, with miscellaneous teachers and instructors receiving a 61 percent premium, secretaries and administrative assistants receiving a 5 percent premium, and 14 occupations receiving no statistically significant premium.

In comparing union premiums by occupation between the private and public sectors, we find that private sector premiums are larger than public sector premiums in most cases. This suggests that the explanation given by some studies, that the reason for higher union premiums in the private sector is due to a concentration of public sector workers in white collar occupations, is not the primary reason for private-public sector differences in union wage premiums. Rather, the persistently larger union wage premiums in the private sector at the occupation level suggest fundamental differences in the effectiveness of unions in the private and public sectors.

Finally, to investigate whether the differences in union premiums paid in the private and public sectors are due to differences in worker characteristics or in the way that unions reward workers in both sectors, we perform an Oaxaca decomposition of private-public sector union wage premium differentials. We find that the majority of the differential between private sector union premiums and public sector union premiums appears to be due to differences in the way unions reward workers in the private and public sectors, not because of differences in the types of workers in the private and public sectors. This further supports the idea of fundamental differences in the way unions operate in the private and public sectors.

It should be noted that this study does not address public-private wage differentials. Although the study suggests larger union premiums in the private sector in comparison to the public sector, most existing evidence of public-private sector wage differentials suggests that public sector workers receive a premium over their private sector counterparts. While not examined in our study, most of our data also suggest a public sector wage premium over the private sector. Further research should address the public sector wage premium and disentangle the effects from union wage premiums in the private and public sectors.

Moreover, our study does not address specific differences in the ways unions reward workers in the private and public sectors by occupation. This would require a detailed Oaxaca decomposition for each of the occupations examined.

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[8] Some of these studies are: Freeman and Ichniowski 1988, Lewis 1990, Blanchflower and Bryson 2004, Lewin et al. 1988, Lewin 1987, and Mueller 2000.

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